20041018.ba v03_n717.bam.20041018

>From ???@??? Mon Oct 18 21:18:24 2004 -0500
Message-Id: <200410190218.i9J2IAVg002428@sco.theporch.com>
Date: Mon, 18 Oct 2004 21:17:47 CDT
From: Old Tube Radios <boatanchors@theporch.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: BOATANCHORS digest 3717

BOATANCHORS Digest 3717

Topics covered in this issue include:

by "Bill Hawkins" <bill@iaxs.net>

Date: Mon, 18 Oct 2004 11:23:44 -0400 (EDT)
Message-Id: <200410181523.i9IFNiWe242809@wine.ecunet.org>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: NEED 6146A & 6146B RCA INFO
From: JOHN.SEHRING@ecunet.org

To: boatanchors@theporch.com

Re: 6146, 6146A, & 6146B...

Could someone make a copy of the 6146A & 6146B speces from RCA's Xmting Tube handbook? I've got the plain 6146 info. Usual rules of remuneration apply, thanks.

 -John Sehring (Thu, Oct 14, 2004, 8:35 am) Dell Rapids SD - UCC - WB0EQ
              "Live long and prosper." -John 10.10b (adapted)

Date: Mon, 18 Oct 2004 10:43:32 -0500
From: Charles <charlesmorris@direcway.com>
Subject: Re: BOATANCHORS digest 3716
To: Old Tube Radios <boatanchors@theporch.com>
Message-id: <e4p7n0lsh6gldqsqkh4gcurp4f7c4q65a8@4ax.com>
MIME-version: 1.0
Content-type: text/plain; charset=us-ascii
Content-transfer-encoding: 7BIT

On Mon, 18 Oct 2004 10:26:28 -0500 (CDT), you wrote:

>On Sun, 17 Oct 2004, Bob Roehrig wrote:
>
>> OK perhaps you power gurus can answer this one: The feed for my shack is
>> a 30 amp 220V feed from the main box (HOT, HOT, NEUT) that feeds a branch
>> box in the wall of the shack. In that box I have the ground lead from all
>> the 120V outlets connected together, then going to water pipe ground. That
>> is not connected to the neutral bus in the box - should it be?
>
>All ground must eventually meet at ground for the service entrance.

True, at the main service entrance panel. What I think Bob is
asking is, should the neutral and ground buses ALSO be connected
("bonded") within his BRANCH panel?

Typically, branch panels come with a bonding screw in a little
plastic bag that can be screwed through the neutral bus bar which

makes contact to the metal case and grounding bus bar. The
accompanying instructions say "use in accordance with your local
electrical code", or similar.

I think there should be one, and only one, point in the system
where the neutral and grounding buses are connected, and that is
at the main service entrance panel. I don't know whether to bond
them at the branch panel or not...

-Charles

Date: Mon, 18 Oct 2004 12:00:23 -0500 (CDT)
From: Bob Roehrig <broehrig@aurora.edu>
To: Old Tube Radios <boatanchors@theporch.com>
cc: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: BOATANCHORS digest 3716
Message-ID: <Pine.OSF.4.58.0410181153500.382225@mail.aurora.edu>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

On Mon, 18 Oct 2004, Charles wrote:

> What I think Bob is
> asking is, should the neutral and ground buses ALSO be connected
> ("bonded") within his BRANCH panel?

Yes, that is what I was asking. The feed from the main panel is 12/3 (no
ground). If I replaced that with 12/3 with ground, then all I would have
would be 2 parallel conductors between the two neutral busses, and that
doesn't make any sense.

So what I chose to do was connect the ground leads in the branch panel to
water pipe ground, which happens to be the same water pipe that the
neutral bus in the main panel is connect to. I don't see any problem with
this as it is really the same ground and much heavier (1/2 inch copper)
and shorter than if I ran a 50 foot wire back to the main panel.
It would seem to me that it is a much better RF ground also. These grounds
are also tied to ground rods).

Bob Roehrig
Aurora University Telecom dept.
broehrig@aurora.edu 73 de K9EUI
630-844-4898 fax 630-844-4222
"Nostalgia is a thing of the past"

Mime-Version: 1.0
From: "k4pf@juno.com" <k4pf@juno.com>
Date: Mon, 18 Oct 2004 17:10:27 GMT
To: Old Tube Radios <boatanchors@theporch.com>
Cc: boatanchors@theporch.com
Subject: 6146A (was Re:COLLINS TALES)
Content-Type: text/plain
Message-Id: <20041018.101109.507.56253@webmail03.lax.untd.com>

-- JOHN.SEHRING@ecunet.org wrote:

>I had an interesting visit at the Iowa City, IA hamfest with Warren >W0WL
>who worked at Collins for many years.

>He told me that when they were developing the S-Line & KWM-1, he >discovered
>that 6146's could not meet Art Collin's need for -35 dB max of intermod
>products, even with inverse RF feedback.
<snip>
>Discussions with RCA by Warren resulted in the 6146A, esp. after he >told
>RCA that about 100k tubes would be needed! The -A did meet the IM >specs
>in the Collins radios.
<snip>

Hello, John

The KWM-1 came out in 1957, the S/Line in late 1958.
Both used the original 6146 tube.

The new 6146A was advertised by RCA on the back cover of the June '63
QST. All RCA touted was improved heater characteristics,
good for mobile use, compared to the old 6146.
(ratings of the 6146 and 6146A were otherwise identical).

Maybe Warren was thinking of the 6146B, which would
be operated more within its ratings in the Collins gear
than the 6146 was, given its greater plate and screen dissipation.
The 6146B was advertised in Dec 1963.

73,
Ed Knobloch

Mime-Version: 1.0
Message-Id: <p06020400bd99a6017c75@[216.175.80.16]>
Date: Mon, 18 Oct 2004 10:15:33 -0700

To: Old Tube Radios <boatanchors@theporch.com>
From: Scott Robinson <spr@earthlink.net>
Subject: Re: 220v hook up and 120V grounding practices
Content-Type: text/plain; charset="us-ascii" ; format="flowed"

First:

Hi Hank, good to hear from you in this forum again.

Second:

I agree that U-ground receptacles were introduced about 50 years ago. The 220V issue originally raised in this thread is quite different from the topic I will raise and was a good question.

My attitude about grounding practices for 120V stuff is influenced by the fact that since 1960 when I left my parents' house to go to college I have lived in houses, dorms, or apartments with no grounded outlets or wiring for 30 out of those 44 years. My present house, built in 1947, has early 2 wire Romex wiring with no ground wires. I expect that many people have the same experience, so when someone gets strident about how you really ought to put three wire U-ground cords on everything you touch, I don't see the point. Sure, lots of houses have U-ground outlets, but in many of them the outlets have been replaced so that you can plug modern stuff in. However, the ground terminal left unconnected, there being no wire to connect it to. I have done this in my house in some places. Of course, I know all this so I can use the system with understanding. The exceptions are my washing machine, which I grounded to the adjacent water pipe, and my dishwasher, which is grounded by the copper water pipe I connected it with.

As I read the electrical code, it actively discourages legal addition of ground wires by insisting that they must be run along the same path as the power wiring. This is not possible in most houses, since as in mine the wiring is run the ceiling rather than beneath the floor where I could get at it. I suppose I should crawl around and do it anyway, but haven't yet. I don't much care if it's legal, only if it will work right.

Back to the radios: I do put 3 wire cords on things with metal housings, such as the BA and military stuff that is the focus of this group. I also have a lot of wood radios and they get new, un-rotted 2 wire line cords.

So there's my opinion.

Regards,

Scott Robinson

Message-ID: <4173FEA6.8090308@mindspring.com>
Date: Mon, 18 Oct 2004 13:34:30 -0400
From: Garey Barrell <k4oah@mindspring.com>
MIME-Version: 1.0
To: Old Tube Radios <boatanchors@theporch.com>
CC: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: COLLINS TALES
Content-Type: text/plain; charset=ISO-8859-1; format=flowed
Content-Transfer-Encoding: 7bit

John -

I wonder if he was not referring to the 6146B rather than the "A"? I believe the only difference in the "A" version was the "dark heater" feature RCA produced for mobile operation. It was affected less than the standard heater by the voltage changes of a mobile battery/charger system. The "B" actually has a higher plate dissipation rating than the 6146/As.

The "B" actually required component changes in the neutralization components from the early S Line transmitters. The early ones used a compression type trimmer which would actually "burn up" with the "B" tubes. Collins then switched to a small air trimmer capacitor for the neutralization adjustment.

I have an RCA TT-5 Transmitting Tube Manual, which I think was the last one. If you find an A or B data sheet, I'd be very interested in a copy.

73, Garey - K4OAH
Atlanta

JOHN.SEHRING@ecunet.org wrote:

>To: boatanchors@theporch.com
>
>I had an interesting visit at the Iowa City, IA hamfest with Warren W0WL
>who worked at Collins for many years.
>
>He told me that when they were developing the S-Line & KWM-1, he discovered
>that 6146's could not meet Art Collin's need for -35 dB max of intermod
>products, even with inverse RF feedback.
>

>BTW, Warren met Art when the former was 12 years old. Upon graduating
>fromn college, was asked by Art to join Collins, which eventually happened.
>
>Discussions with RCA by Warren resulted in the 6146A, esp. after he told
>RCA that about 100k tubes would be needed! The -A did meet the IM specs
>in the Collins radios.
>
>I haven't seen a lot of -A's myself...lots of plain 6146 & -B's. PS The
>-B requires some circuit adjustments over the plain 6146 to reach its full
>potential.
>
>Note on 6146B apps follows.
> -John Sehring (Thu, Oct 14, 2004, 7:53 am) Dell Rapids SD - UCC - WB0EQ
>   "Live long and prosper." -John 10.10b (adapted)
>
>
>
>

Date: Mon, 18 Oct 2004 11:39:49 -0700 (MST)
From: Richard Loken <richardlo@admin.athabascau.ca>
Subject: re: bonding grounds and neutrals
To: Old Tube Radios <boatanchors@theporch.com>
Cc: Old Tube Radios <boatanchors@theporch.com>
Message-id: <Pine.PMDF.3.95.1041018112947.541176470D-100000@admin.athabascau.ca>
MIME-version: 1.0
Content-type: TEXT/PLAIN; charset=US-ASCII

On Mon, 18 Oct 2004, Charles wrote:

> Typically, branch panels come with a bonding screw in a little
> plastic bag that can be screwed through the neutral bus bar which
> makes contact to the metal case and grounding bus bar. The
> accompanying instructions say "use in accordance with your local
> electrical code", or similar.

> I think there should be one, and only one, point in the system
> where the neutral and grounding buses are connected, and that is
> at the main service entrance panel. I don't know whether to bond
> them at the branch panel or not...

And yes it is muddy, even when following the code. For instance, if you
put a subpanel in your garage it is expected to be grounded at the main
service panel unless the garage is more than some distance from the house
in which case you must use a ground at the garage and run a bonding wire
back to the main panel. But that still doesn't tell you whether you want
to strap the neutral bus to the ground bus in subpanel... Hmmm. If I have

a local ground then I should ground the neutral too?

Well, when I wired my garage which was 20' from the house I was told by the inspector not to strap the neutral and the ground in the subpanel. He also told me that I didn't need a ground rod but it was too late for that because I had already installed the rod and a #6 wire. The code was sufficiently vague that I did not know if I needed one and so I erred on the conservative side.

--

Richard Loken VE6BSV, Systems Programmer - VMS
Athabasca University
Athabasca, Alberta Canada
** richardlo@admin.athabascau.ca **

"I think of a man and then I take away reasoning and accountability" Melvin Udall in "As Good as it Gets"

---

content-class: urn:content-classes:message
MIME-Version: 1.0
Content-Type: text/plain;
charset="us-ascii"
Content-Transfer-Encoding: quoted-printable
Subject: RE: COLLINS TALES & 6146, A, B
Date: Mon, 18 Oct 2004 13:59:40 -0400
Message-ID: <67DCA285A2D7754280D3B8E88EB54802073A5612@MSGBOSCLB2WIN.DMN1.FMR.COM>
From: "Kavanagh, George" <George.Kavanagh@FMR.COM>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: <boatanchors@theporch.com>

In Re 6146 data sheets:

See:

http://www.mif.pg.gda.pl/homepages/frank/sheets/049/6/6146.pdf

http://www.mif.pg.gda.pl/homepages/frank/sheets/079/6/6146A.pdf

http://www.mif.pg.gda.pl/homepages/frank/sheets/049/6/6146B.pdf

-georgeK KB1HFT

-----Original Message-----
From: Garey Barrell [mailto:k4oah@mindspring.com]=20
Sent: Monday, October 18, 2004 1:35 PM
To: Old Tube Radios
Cc: Old Tube Radios
Subject: Re: COLLINS TALES

John -

I wonder if he was not referring to the 6146B rather than the "A"? I=20
believe the only difference in the "A" version was the "dark heater"=20
feature RCA produced for mobile operation. It was affected less than=20
the standard heater by the voltage changes of a mobile battery/charger=20
system. The "B" actually has a higher plate dissipation rating than the

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The "B" actually required component changes in the neutralization=20
components from the early S Line transmitters. The early ones used a=20
compression type trimmer which would actually "burn up" with the "B"=20
tubes. Collins then switched to a small air trimmer capacitor for the=20
neutralization adjustment.

I have an RCA TT-5 Transmitting Tube Manual, which I think was the last=20
one. If you find an A or B data sheet, I'd be very interested in a
copy.

73, Garey - K4OAH
Atlanta

JOHN.SEHRING@ecunet.org wrote:

>To: boatanchors@theporch.com
>
>I had an interesting visit at the Iowa City, IA hamfest with Warren
W0WL
>who worked at Collins for many years.
>
>He told me that when they were developing the S-Line & KWM-1, he
discovered
>that 6146's could not meet Art Collin's need for -35 dB max of intermod
>products, even with inverse RF feedback.
>
>BTW, Warren met Art when the former was 12 years old. Upon graduating
>fromn college, was asked by Art to join Collins, which eventually
happened.
>
>Discussions with RCA by Warren resulted in the 6146A, esp. after he
told
>RCA that about 100k tubes would be needed! The -A did meet the IM
specs
>in the Collins radios.

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>I haven't seen a lot of -A's myself...lots of plain 6146 & -B's. PS
The
>-B requires some circuit adjustments over the plain 6146 to reach its
full
>potential.
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>Note on 6146B apps follows.
> -John Sehring (Thu, Oct 14, 2004, 7:53 am) Dell Rapids SD - UCC -
WB0EQ
>   "Live long and prosper." -John 10.10b (adapted)
>
>
> =20
>

From: "Bill Hawkins" <bill@iaxs.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: RE: bonding grounds and neutrals
Date: Mon, 18 Oct 2004 13:05:21 -0500
Message-ID: <008401c4b53d$086e5ee0$0500a8c0@darius.domain.actdsltmp>
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

I put a 6 breaker panel in the shop 40' from the entrance panel.
Used 3 wire plus ground #6 plastic wire. Followed the principle
of one common ground at the service entrance, so the shop panel
was not grounded again and there was no connection from the
neutral bar to ground.

The inspector didn't open the panel, just went around with an
outlet polarity test lamp.

No problems in ten years.

Regards,
Bill Hawkins

-----Original Message-----
From: Richard Loken
Sent: Monday, October 18, 2004 1:40 PM

If I have a local ground then I should ground the neutral too?

```
------------------------------
From: wb3fau@att.net
To: Old Tube Radios <boatanchors@theporch.com>
Cc: "b. smith" <smithab11@comcast.net>,
        Old Tube Radios <boatanchors@theporch.com>
Subject: Re: 220 hook up
Date: Mon, 18 Oct 2004 18:30:13 +0000
Message-Id:
<101820041830.3215.41740BB400046FA000000C8F21603759649A0E00CC0D99@att.net>
MIME-Version: 1.0
Content-Type: multipart/alternative;
boundary="NextPart_Webmail_9m3u9jl4l_3215_1098124213_0"


--NextPart_Webmail_9m3u9jl4l_3215_1098124213_0
Content-Type: text/plain
Content-Transfer-Encoding: 8bit

Correct on the 2 pole breaker.  I made  that  asumption.  Russ.

-------------- Original message from "b. smith" : --------------

> Dont forget to use a ganged circuit breaker for both feeds, when one opens
> it will gang the other one open . Not good to have one feed hot and the
> other feed open.
>
> breck k4che
>
--NextPart_Webmail_9m3u9jl4l_3215_1098124213_0
Content-Type: text/html
Content-Transfer-Encoding: 8bit

<html>
<!-- BEGIN WEBMAIL STATIONERY -->
<head><style type='text/css'>
p {
margin: 0px;
}
</style></head>
<body>
<!-- WEBMAIL STATIONERY noneset -->
Correct on the 2 pole breaker.  I made  that  asumption. 
Russ.<BR>
<BLOCKQUOTE style="PADDING-LEFT: 5px; MARGIN-LEFT: 5px; BORDER-LEFT: #1010ff 2px
solid">-------------- Original message from "b. smith" <SMITHAB11@COMCAST.NET>:
-------------- <BR><BR>&gt; Dont forget to use a ganged circuit breaker for both
feeds, when one opens <BR>&gt; it will gang the other one open . Not good to have
one feed hot and the <BR>&gt; other feed open. <BR>&gt; <BR>&gt; breck k4che
```


> </BLOCKQUOTE>
<!-- END WEBMAIL STATIONERY -->

</body>
</html>

--NextPart_Webmail_9m3u9jl4l_3215_1098124213_0--

Date: Mon, 18 Oct 2004 15:41:18 -0400
From: Rhett George <rtg@ee.duke.edu>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: 220 hook up
Message-ID: <20041018194118.GA24556@ee.duke.edu>
Mime-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Disposition: inline

 - Greetings -

Many thanks to Arden and others for describing the single-phase power system so well. Those of you who have one-lung generators for Field Day and other applications experience a power system where ground and neutral are the same. What's the big deal about tying or not tying those together normally? Here's the scenario. Your house, the Smith's house, and the Green"s are served from the same pole pig which has one secondary, center-tapped for 110-220 V service. Are yuou going to trust Smith or Green to maintain a good connection between neutral and ground? Is Smith going to trust either of you other two to do same? No. the utility company grounds the center-tap at the pole carrying the pole pig. Thanks to assorted leakages, your electrical service ground is a fraction of a volt to several volts different from the neutral. But it is ground at your house, and your abode is where you do not want to be electrically tickled. So ground what you can and make the unground-able non-conductive. And live to enjoy ham radio.

73   Rhett - KE4HIH

Message-ID: <007001c4b552$01657ab0$a6e83d40@orrin34105f2f7>
From: "Orrin Bentz" <minmar@2z.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: bonding grounds and neutrals
Date: Mon, 18 Oct 2004 15:35:27 -0500
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

Hi

My 2 cents worth on this question.

The ground and neutral are ONLY brought together at the main service entrance from
the power company.

The ground and neutral are NEVER EVER brought together at any sub-panels no matter how far the sub-panel is from the main service entrance. Ignoring this rule
is asking for all kinds of stray voltages and a dangerous situation.

Distance concerns about the main electrical service entrance and any sub-panels can
be handled by using large enough wire.

A ground rod attached to the ground bus at a sub-panel is just extra insurance that
the sevice entrance and the sub panel grounds are at the same potential. However it
is not usually required in any juristiction.

Sina Die

Orrin Bentz

Date: Mon, 18 Oct 2004 19:22:11 -0500 (CDT)
From: Bob Roehrig <broehrig@aurora.edu>
To: Old Tube Radios <boatanchors@theporch.com>
cc: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: grounds and neutrals
Message-ID: <Pine.OSF.4.58.0410181913140.401110@mail.aurora.edu>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

OK - first thanks to all for your input on this.

Seems the way to do it properly - in a branch box, is to keep the grounds and neutrals separate, only connecting them together back in the bus at the main entrance/breaker panel.

As to ground loops, if you have your equipment connected to ground rods for RF purposes, there is no way to prevent some kind of ground loop. My shack ground rods are just on the opposite side of the wall, less than 10

feet away from the shack equipment. The electrical service ground rod is a good 50 feet away from there. The only way to prevent a ground loop is to not connect the outlet grounds back to the entrance panel and only connect them to the shack's ground rods. and I think we agree that that is not code.

Bob Roehrig
Aurora University Telecom dept.
broehrig@aurora.edu 73 de K9EUI
630-844-4898 fax 630-844-4222
"Nostalgia is a thing of the past"

Message-ID: <00d901c4b576$b65f8c20$6501a8c0@akorn.net>
From: "Tom Rauch" <w8ji@contesting.com>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: "Old Tube Radios" <boatanchors@theporch.com>
Subject: Re: grounds and neutrals
Date: Mon, 18 Oct 2004 20:58:13 -0400
MIME-Version: 1.0
Content-Type: text/plain;
  charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

> As to ground loops, if you have your equipment connected to ground rods
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> shack ground rods are just on the opposite side of the wall, less than 10
> feet away from the shack equipment. The electrical service ground rod is a
> good 50 feet away from there. The only way to prevent a ground loop is to
> not connect the outlet grounds back to the entrance panel and only connect
> them to the shack's ground rods. and I think we agree that that is not

I have a 4" wide flashing between my shack entrance and the power mains ground. It makes a bee-line under the house. Probably 35-40ft. Just a guess.

I have a halo ground from 3/8 inch copper tubing surrounding the house, and everything bonds to that.

Everything entering the house grounds to that system.

I have a 318ft tower that gets hit a few times a year and a couple other towers. Using this with single point grounds at equipment clusters, nothing in the house has ever had significant damage. Never even lost a modem, and I have a 24HR connection via ISDN, despite the fact I've had telephone lines outside the house melt.

Message-ID: <004c01c4b57c$11e6b140$dae47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: 6146B INFO
Date: Mon, 18 Oct 2004 18:08:13 -0700
MIME-Version: 1.0
Content-Type: text/plain;
     charset="Windows-1252"
Content-Transfer-Encoding: 7bit

Buried in the article is:

> .....If your power supply is dynamically stable and capable of the extra current
demanded by the 6146B......

I never knew a tube to demand current unless it was sick with gas pains. All the tubes I've met only pass the current they are commanded to by a signal on their control grid. If for some reason the transconductance of the 6146B is different than that of the 6146 and 6146A under the same operating conditions then the three variants would be different tubes. I rather doubt that RCA intended equipment to be modified in order to upgrade to a "B" tube. Using a "B" in earlier design equipment would simply mean that the newer version would be more abuse tolerent than the earlier version, no more power output would be available unless operating conditions were altered. Statements like the above are often the reason some folks are mislead into thinking that an amplifier will suddenly have more power output by going for the latest letter in the alphabet. Audiophooles like to believe that. Hams should know better.

Arden Allen
KB6NAX

Message-ID: <004d01c4b57c$12657e30$dae47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: BOATANCHORS digest 3716
Date: Mon, 18 Oct 2004 18:12:55 -0700
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

> .... What I think Bob is
asking is, should the neutral and ground buses ALSO be connected
("bonded") within his BRANCH panel? ....

NO! EARTH (ground) and NEUTRAL should never be connected together at any
other place than the service entrance NEUTRAL / EARTH bus bar.

Please read my previous posting to find out why.

Arden Allen
KB6NAX

Message-ID: <005101c4b57c$1409b850$dae47443@KB6NAX>
From: "Arden Allen" <gumbear@pacbell.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: bonding grounds and neutrals
Date: Mon, 18 Oct 2004 18:36:14 -0700
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

> ....A ground rod attached to the ground bus at a sub-panel is just extra
insurance that the sevice entrance and the sub panel grounds are at the same
potential. ...

That is typical of the erroneous thinking that has endangered many folks
over the years. Ground (dirt, soil, land, humus, loam, clay, sod, turf....)
is an imperfect conductor. It NEVER can be depended on to protect against
fault conditions that raise equipment enclosures to dangerous potentials. A
proper low resistance ground can only be obtained with a properly sized
copper or aluminum (check your local electrical code) run back to the
service entrance ground bus.

Arden Allen
KB6NAX

From: "Bill Hawkins" <bill@iaxs.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: RE: bonding grounds and neutrals
Date: Mon, 18 Oct 2004 21:17:38 -0500
Message-ID: <009601c4b581$ce0ec6a0$0500a8c0@darius.domain.actdsltmp>
MIME-Version: 1.0
Content-Type: text/plain;
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Content-Transfer-Encoding: 7bit

So, if a transmitter is fifty feet from the service entrance ground (to the water main entrance in all older houses on city water) and it needs a local ground to tame the RF on the case, why can't the transmitter case be capacitively connected to the local ground?

Tom Rauch with the copper pipe ground plane around his house has the best possible ground system, as his experience with lightning showed. It isn't any better connected to the mythical Mother Earth ground, but it is a zero volt plane of reference when anything bad happens. Putting a ground rod at each end of the house is useless. The one nearest to the lightning strike will rise to a higher voltage than the other one, even if they are bonded together by any practical wire size.

The power company replaced a 7.5 KV neighborhood distribution line here about seven years ago. They used one of those drilling rigs with the drill head that can be guided by a man walking beside it, even though the head is two feet underground. When they set up the engine end of the drill rig, they put eight foot square metal mats on the ground around the rig. Why? So that no one would be shocked if the drill head bit into the existing cable. The ground grids that they put down were bonded to the machine. There was no way that they'd get a safe earth ground, even with 30 feet of drill pipe running along the street two feet down.

The single point earth ground is the next best thing to a ground plane. Everything connected to it will rise the same amount, unless another ground path is formed by insulation breakdown. The telephone line is not grounded at the electric service entrance. There may be a protector block that is designed to ground surges, but that's after the surge has hit. Remember the telephone protector blocks with the four inch fiber tubes? Those were fuses in case the 4 KV street lighting wire fell on the telephone wires, long ago.

Remarkable how much can be said about grounding, no?

Regards,
Bill Hawkins

End of BOATANCHORS Digest 3717
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